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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,554	12/27/2000	Ayako Hohsaka	HOHSAKA-2	2522

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Browdy & Neimark
624 Ninth Street NW
Washington, DC 20001-5303

EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 10/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/720,554

Applicant(s)

HOHSAKA ET AL.

Examiner

Martin J Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments appear after the first rejection to which they are directed.

2. Claims 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 10 and 11, at least one of the anions (X_1^- or X_2^-) would have to be that of the resultant dye (X^-).

When making the dye, the counter-ions will be left behind as the resultant dye is charged. Failure to have at least one of the anions (X_1^- or X_2^-) meet the limitations of (X^-) would not result in the dye of formula 1 and the claims would be **incomplete**. Failure to have both meet the limitations of (X^-) would result in a very difficult separation of the counter-ions. If the applicant seeks coverage including the exchange of ions, which can be less than trivial, then the applicant should insert that into the claims.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. '839.

Sato et al. '839 teaches the use of compounds embraced by formula (I), where the benzene nuclei may be condensed with one or more benzene rings or may be substituted by various moieties.

(3/18-24) the number of methine groups is 5 when n is 2 (2/64). The anions may be any acid

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anions including halogens, and SbF_6^- . (2/65-67). The N-alkyl groups are different with R_5 being a C_{1-3} alkyl group and R_6 being a C_{3-18} alkyl group. This asymmetry is disclosed as improving the stability, solubility and the like. (4/20-30 and 2/10-15). The equivalence in the various terminal moieties is found in 3/24-25. The equivalence of heptamethine and pentamethine chains based upon the disclosure of n being equal to 2 or 3 (2/65). The equivalence in the various anions is found in 2/65-67.

It would have been obvious to modify compounds 6 or 16 by using benzoindole moieties such as those shown in compounds 5 and 10 as the terminal moieties with a reasonable expectation of forming a dye useful in optical recording with similar spectral, solubility and stability to that of compounds 6 or 16 or to replace the heptamethine chain of compounds 5 and 10 with pentamethine chains based upon the disclosure of n being equal to 2 or 3 (2/65). The equivalence in the various terminal moieties is found in 3/24-25. It also would have been obvious to use other anions disclosed, such as halogens and AsF_6^- , in place of the BF_4^- with a reasonable expectation of achieving comparable results based upon the disclosure of these as preferred anion species. Further it would have been obvious to one skilled in the art to use the resultant dyes in optical recording media based upon the disclosure to do so within the reference.

The applicant's arguments fail to appreciate that the spectral properties of cyanine dyes are dominated by the length of the methine chain. (see Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964)) The disclosure of equivalence of the various terminal moieties as well as the equivalence of pentamethine and heptamethine methine chains is clearly established in the reference. Therefore the teachings as a whole, render the invention claimed obvious. The benefit described by the applicant as the basis for the benefit (improvement in solubility 3/24-

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27). The examiner's position is that the anion does not contribute much to this and the benefit ascribed by the applicant to the dye is well appreciated in the art cited. The applicant is free to submit declaration evidence concerning the unexpected improvement relative to the pentamethine dyes of Sato et al. '839. The teachings cited by the examiner clearly establish a basis for the substitutions argued by the examiner, their assumed equivalence and expectation of functionality. Further, the examiner notes that the increased solubility presented as the sole benefit by the applicant is fully appreciated in the art and attributed to the different chain lengths of the N alkyl moieties.

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Inagaki et al. '281 or Maeda et al. EP 0483387 or Morishima et al. '772, in view of Sato et al. '839.

Inagaki et al. '281 teach the use of compounds embraced by the formula (1), which includes linking groups such as those of formula (b) in column 3. The substituents Y may be hydrogen, alkyl groups, and halogens. (4/21-32). Benzoindolenic terminal moieties are taught as evidenced by compounds 14 and 15 in columns 7 and 8. The use of the PF_6^- anion is disclosed as resulting in increased stability, has good solubility and is free from the danger of explosion. (1/65-2/4). The dyes disclosed are all symmetric.

Maeda et al. EP 0483387 teaches the use of cyanine dyes embraced by the formula (II) on page 15, where the linking group is a pentamethine linkage. The dyes in example 7 is a symmetric pentamethine benzoindolenic dye having a PF_6^- anion as the counterion.

Morishima et al. '772 teaches the use of cyanine dyes embraced by the formula (B-1) in column 26, where the linking group is a pentamethine linkage optionally substituted with alkyl or halogen moieties and the Z moieties may be naphthalene residues and the N-substituents may

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be the same or different. (26/11-21). The dyes B-3, B-14 and B-10, in example 7 is a symmetric pentamethine benzoindolenic dye having a PF_6^- anion as the counterion. The use of fluorine as the anion is also disclosed. (24/66).

It would have been obvious to one skilled in the art to modify the symmetric pentamethine benzoindolenic dye having a PF_6^- anion as the counterion embraced within the teachings of either Inagaki et al. '281 or Maeda et al. EP 0483387 or Morishima et al. '772 by using different N-substituents on the benzoindolenic moieties based upon the teachings of Sato et al. '839 with a reasonable expectation of achieving the increases in solubility, stability and the like as this is attributed to the asymmetry in the N-substituents.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The applicant should recognize that the rejection is based upon a combination of references and that the source of the increased solubility is recognized in the prior art (Sato et al.). The arguments that the cyanine dyes of the references are not combinable with teachings related to cyanine dyes due to teachings away through the disclosure of particular species, which the applicant of the instant application assumes are preferred is laughable and entirely without merit. Clearly a problem (solubility of cyanine dyes) has been identified in the art as well as its solution **and to argue that one of ordinary skill in the art would fail to recognize the benefit of the different substituents is to render one skilled in the art deaf, dumb and blind.** This is certainly not the case as we

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assume in the patent law that they can at least read (and understand the subject matter). The rejection stands.

6. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yashiro et al. JP 05-147356, in view of Inagaki et al. '281 and/or Saito et al. '089.

Yashiro et al. JP 05-147356 teaches asymmetric pentamethine dyes with perchlorate counterions.

Saito et al. '089 teaches that the use of the PF_6^- anion as the counterion increases the thermal decomposition temperature of the cyanine dye relative to the perchlorate ion. (table 3, Col. 22). This translates to increased resistance to fading of the dye due to heat or light, increased writing sensitivity and high C/N values.

It would have been obvious to modify the teachings of Yashiro et al. JP 05-147356 by using the PF_6^- anion as the counterion as taught by Inagaki et al. '281 and/or Saito et al. '089 with a reasonable expectation of improving the stability of the resultant medium with respect to heat and light based upon the teachings of Inagaki et al. '281 and/or Saito et al. '089.

The rejection stands for essentially the same reasons as above, with the notation that the number of embodiments or pages in a patent document does not have any bearing per se on the quality or the teachings. The rejection stands.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. '839 further in view of either Borrer et al. '971, Mee et al '419, Lee et al. '868, GB 355693 and Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243.

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Borrer et al. '971 teaches the formation of unsymmetrical cyanine dyes through a reaction of the p-toluenesulfoanilinovinyl derivative of E with a heterocyclic compound having a reactive methyl group. (5/15-6/26).

Mee et al '419 teaches the reaction of the product of example 3 with 3-ethyl-2-methyl-6-nitrobenzothiazolinium in example 7.

Lee et al. '868 teaches the reaction of compound 3 with compound 4 containing an active methyl group in pyridine, followed by acid to produce the compound 5 shown in figure 3c.

GB 355693 teaches the production of unsymmetrical cyanine dyes using a heterocyclic molecule containing a methylene linkage with an aryl amino leaving group with a heterocyclic ammonium salt containing a reactive methyl group. (1/88-2/6)

Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243 teaches various methods for making unsymmetrical cyanine dyes including that describing the reaction of compound (II) on page 201 with quaternary salts of heterocyclic moieties having a reactive methyl group. (201-202).

It would have been obvious to one skilled in the art to use **old and well known** synthesis processes, such as those disclosed by either Borrer et al. '971, Mee et al '419, Lee et al. '868, GB 355693 and Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243 as useful for forming cyanine dyes to form the cyanine dyes of Sato et al. '839 with a reasonable expectation of forming the desired compounds based upon the age and repeated testing of this synthetic process as evidenced by the number of references.

The rejection stands with the admonition that the process of making cyanine dyes in the manner described in the claims is old and well known as evidenced by the number and age of the references applied.

8. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Inagaki et al. '281 or Maeda et al. EP 0483387 or Morishima et al. '772 as modified by Sato et al. '839 and further in view of either Borrer et al. '971, Mee et al '419, Lee et al. '868, GB 355693 and Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243.

It would have been obvious to one skilled in the art to use **old and well known** synthesis processes, such as those disclosed by either Borrer et al. '971, Mee et al '419, Lee et al. '868, GB 355693 and Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243 as useful for forming cyanine dyes to form the cyanine dyes of over either Inagaki et al. '281 or Maeda et al. EP 0483387 or Morishima et al. '772 as modified by Sato et al. '839 with a reasonable expectation of forming the desired compounds based upon the age and repeated testing of this synthetic process as evidenced by the number of references.

The rejection stands with the admonition that the process of making cyanine dyes in the manner described in the claims is old and well known as evidenced by the number and age of the references applied.

9. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yashiro et al. JP 05-147356 as modified by Inagaki et al. '281 and/or Saito et al. '089 further in view of either Borrer et al. '971, Mee et al '419, Lee et al. '868, GB 355693 and Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243.

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It would have been obvious to one skilled in the art to use **old and well known** synthesis processes, such as those disclosed by either Borrer et al. '971, Mee et al '419, Lee et al. '868, GB 355693 and Hamer, F.M., "The Cyanine Dyes and Related Compounds" (1964) pp. 200-243 as useful for forming cyanine dyes to form the cyanine dyes of Yashiro et al. JP 05-147356 as modified by Inagaki et al. '281 and/or Saito et al. '089 with a reasonable expectation of forming the desired compounds based upon the age and repeated testing of this synthetic process as evidenced by the number of references.

The rejection stands with the admonition that the process of making cyanine dyes in the manner described in the claims is old and well known as evidenced by the number and age of the references applied.

10 THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

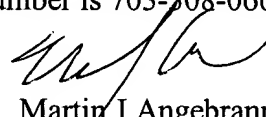
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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranntt whose telephone number is 703-308-4397.

The examiner can normally be reached on Mondays-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Martin J Angebranntt
Primary Examiner
Art Unit 1756

October 3, 2002